
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
NASA-16325 (June 2004)
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DIVISION 16 - ELECTRICAL

SECTION 16325

LOAD-BREAK SWITCHES

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SECTION 16325

LOAD-BREAK SWITCHES
06/04

NOTE: Delete, revise, or add to the text in this section to cover project requirements. Notes are for designer information and will not appear in the final project specification.

This section covers load-break, gang-operated switches, 2.4 kilovolts and above. The drawings should indicate voltage rating and installation details.

PART 1 GENERAL

1.1 REFERENCES

NOTE: The following references should not be manually edited except to add new references. References not used in the text will automatically be deleted from this section of the project specification.

The publications listed below form a part of this section to the extent referenced:

AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)

ANSI C29.1 (1988; R 1996) Electrical Power Insulators - Test Methods

NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION (NEMA)

NEMA SG 6 (2000) Power Switching Equipment

1.2 SUBMITTALS

NOTE: Review submittal description (SD) definitions in Section 01330 SUBMITTAL PROCEDURES and edit the following list to reflect only the submittals required for the project. Submittals should be kept to the minimum required for adequate quality control. Include a columnar list of appropriate products and tests beneath each submittal

description.

The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES in sufficient detail to show full compliance with the specification:

SD-02 Shop Drawings

Fabrication Drawings shall be submitted in accordance with paragraph entitled, "General Requirements," of this section.

Installation Drawings shall be submitted for load-break switches in accordance with the paragraph entitled, "Installation," of this section.

SD-03 Product Data

Equipment and performance data shall be submitted for Load-Break Switches including life, test, system functional flows, safety features, and mechanical automated details.

Manufacturer's catalog data shall be submitted for the following items:

- Load-Break Switches
- Handles

SD-08 Manufacturer's Instructions

Manufacturer's instructions shall be submitted for Load-Break Switches including special provisions required to install equipment components and system packages. Special notices shall detail impedances, hazards and safety precautions.

SD-10 Operation and Maintenance Data

Operation and Maintenance Manuals shall be submitted for the following equipment:

- Load Break Switches

1.3 GENERAL REQUIREMENTS

NOTE: If Section 16003 GENERAL ELECTRICAL PROVISIONS is not included in the project specification, applicable requirements therefrom should be inserted and the following paragraph deleted.

Section 16003 GENERAL ELECTRICAL PROVISIONS applies to work specified in this section.

Fabrication Drawings shall be submitted for load-break switches consisting of fabrication and assembly details to be performed in the factory.

PART 2 PRODUCTS

2.1 SWITCHES

Load-break switches shall be gang-operated, air-break, 3-insulator, 3-pole, single-throw, horizontal-mounted, vertical-break, rotating-insulator type for poletop or structure mounting suitable for the intended application.

Insulators and other component parts shall be in accordance with NEMA SG 6 and ANSI C29.1, except that the leakage distance of each insulator assembly shall be at least 24 inches 600 millimeter.

Switch rating shall not be less than 400 amperes.

Operating parts of switch assemblies shall be corrosion-resistant metals.

Switches shall be provided with suitable attachments to permit closing and opening under full rated load current without damage.

2.2 HANDLES

Operating handles shall be located approximately 5-feet 1500 millimeter above the ground and shall be provided with suitable attachments for padlocking the switches in both open and closed positions.

PART 3 EXECUTION

3.1 INSTALLATION

Switches shall be mounted in accordance with the manufacturer's instructions. Installation shall include necessary timbers, hardware, insulators, and connections to line wire or bus.

Prior to final acceptance the switch shall be energized and the circuit loaded (to the maximum load possible, but not less than 10 percent of expected full load) for a minimum of 10 minutes and the temperature measured, with a non-contact device, to verify contact pressure and alignment. The temperature detector shall be accurate within 0.5 degrees C. Each phase temperature shall be less than 5 degrees C above ambient and within 3 C degrees of each other. Temperatures outside these values warrant investigation.

Installation Drawings shall be submitted for load-break switches.

3.2 GROUNDING

NOTE: In locations where existing underground utilities, equipment or structures may be damaged, ground rod installation should be accomplished using the water jetting method.

Ground rods shall be installed at each poletop switch installation. Operating mechanisms shall be solidly bonded to the ground with a flexible copper strap; joints in the operating mechanisms shall be flexible.

Ground rods shall be not less than 3/4-inch by 20-foot 20 by 6000 millimeter long copper-clad steel. Two rods at least 10 feet 3000 millimeter apart shall be [driven] [installed using a water jetting method] at each switch and shall be solidly bonded together and independently bonded to the switch.

-- End of Section --